

BEYOND EINSTEIN: From the Big Bang to Black Holes

# Constellation

*The Constellation X-Ray Mission*

## ►► SEP Workshop

Presented by

**Suzanne Romaine (SAO)**

**Jean Cottam (NASA/GSFC)**

*Facility Science Team Meeting (FST)  
December 18 – 20, 2006/Goddard Space Flight Center*



## SEP Request for Information

- An RFI for SEP concepts was released October 12
  - “SEP concepts should provide increased spectral resolution at low energies ( $< 0.6$  keV) to maintain a resolving power of  $R > 300$ , and/or additional throughput at high energies ( $> 10$  keV).”
  - Implementation of an SEP concept can not exceed 100 kg or \$100 M.
- Eight white papers were received
  - Low Energy Enhancement
    - Flanagan et al.
    - Lillie et al.
    - Kelley et al.
    - Galleazzi et al.
  - High Energy Enhancement
    - Gorenstein & Ramsey
    - Tueller et al.
    - Kelley et al.
    - Windt
  - Other Enhancements
    - Jahoda et al.

## RFI Response Summary

Authors	SEP Concept	Mass Estimate
K. Flanagan et al.	Diffraction Gratings	60.6 kg
C. Lillie et al.	Diffraction Gratings	~ 100 kg
R. Kelley et al.	Optimized Calorimeters	56 kg (electronics & detector)
M. Galeazzi et al.	Large Area Calorimeter	44% increase in XMS electronics & detector
P. Gorenstein & B. Ramsey	Hard X-ray Telescope	98.4 kg
J. Tueller et al.	Hard X-ray Telescope	55-60 kg for mirrors 19.5 kg detector
D. Windt	Multilayer SXT	---
K. Jahoda et al.	Polarimeter	14 kg

## FST Meeting Objectives

- The purpose of the Workshop is to present the SEP white papers to the FST and to provide a forum for discussion within the community.
  - Specific SEP instrument configurations
  - Estimated performance capabilities
  - Technical aspects, TRL levels, and interface requirements
  - Impacts on the basic SXT/XMS payload
- The goal for days 2 and 3 is for the FST to assess the enhancements required to accomplish the mission science objectives.
  - SEP inputs have been used by the speakers to simulate science results
  - Feedback from the FST during the discussion sessions is important to help in assessing the science enabled by the different SEP options.

## Future Plans

- The Con-X project will carry ***all*** SEP concepts forward.
  - For the Integrated Mission Design Center (IMDC) 2006 analysis the project bracketted the SEP options:
    - A total mass of 200 kg was used to represent both a low energy and a high energy SEP.
    - Point masses with generic locations were implemented.
  - Over the next year, the project will consider and assess the possible mission impacts of each SEP.
  - An AO will be issued for instrument selection and will be the ultimate selection process for SEP options. The timing will depend on the availability of funds.
  - There is currently no funding available to support SEP technology development and proposals to relevant ROSES program opportunities are encouraged. Should additional funding for tech. dev. of SEPs become available, this will be awarded via a competitive process.